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**(54) SEMICONDUCTOR ETCHING METHOD**

(57) Abstract:

**PURPOSE:** To enable a deep etching having high pattern accuracy, by selectively etching a semiconductor substrate by a microwave plasma etching in an atmosphere gas over the fixed pressure without containing carbon.

**CONSTITUTION:** An Si substrate is prepared whereon a sensor region is formed at a fixed part of the main surface 12, and an SiO<sub>2</sub> film is selectively formed on the main surface 11 of this substrate. As the SiO<sub>2</sub> film selectively formed on the main surface 11, the part corresponded to a recess 14 and pelletizing grooves 13 is opened window. Next, a microwave plasma etching is applied to this Si substrate. In this case, a gas selected from gasses not containing carbon e.g. SF<sub>6</sub>, NF<sub>3</sub>, F<sub>2</sub>, XeF<sub>2</sub> is used as the atmosphere gas, and the pressure of the atmosphere gas is set  $5 \times 10^{-4}$  Torr or more. Thereby, the Si substrate 1 for a semiconductor sensor is obtained which has a deep and high pattern accuracy recess 14 and groove 13.

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